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## (54) SECURITY BOX OR DRAWER

(57) A security storage box or drawer (14) comprises an outer housing divided by internal walls (21) into compartments (19). Either the box (14) or a slidable closure member (22) is movable stepwise so as to selectively close or open said compartments (19), any opening movement being subject to a time delay for security purposes, while closing movement is possible at any time. The opening of each successive compartment (19) is subject to a separate delay period.

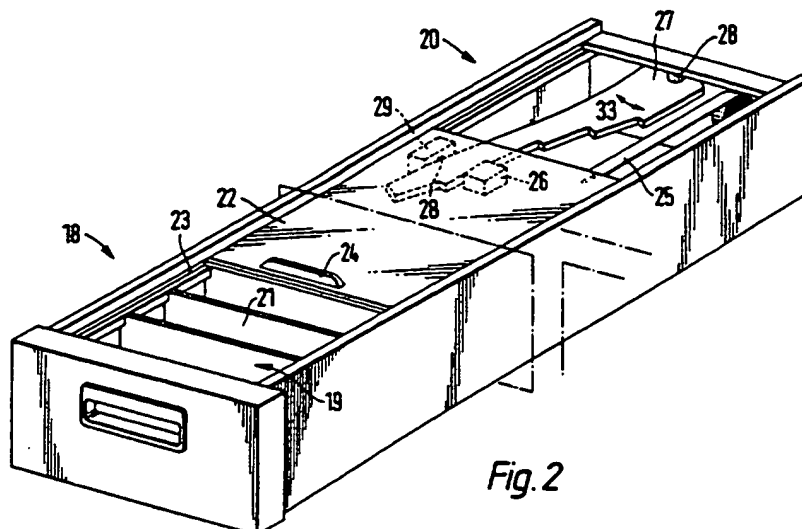


Fig. 2

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

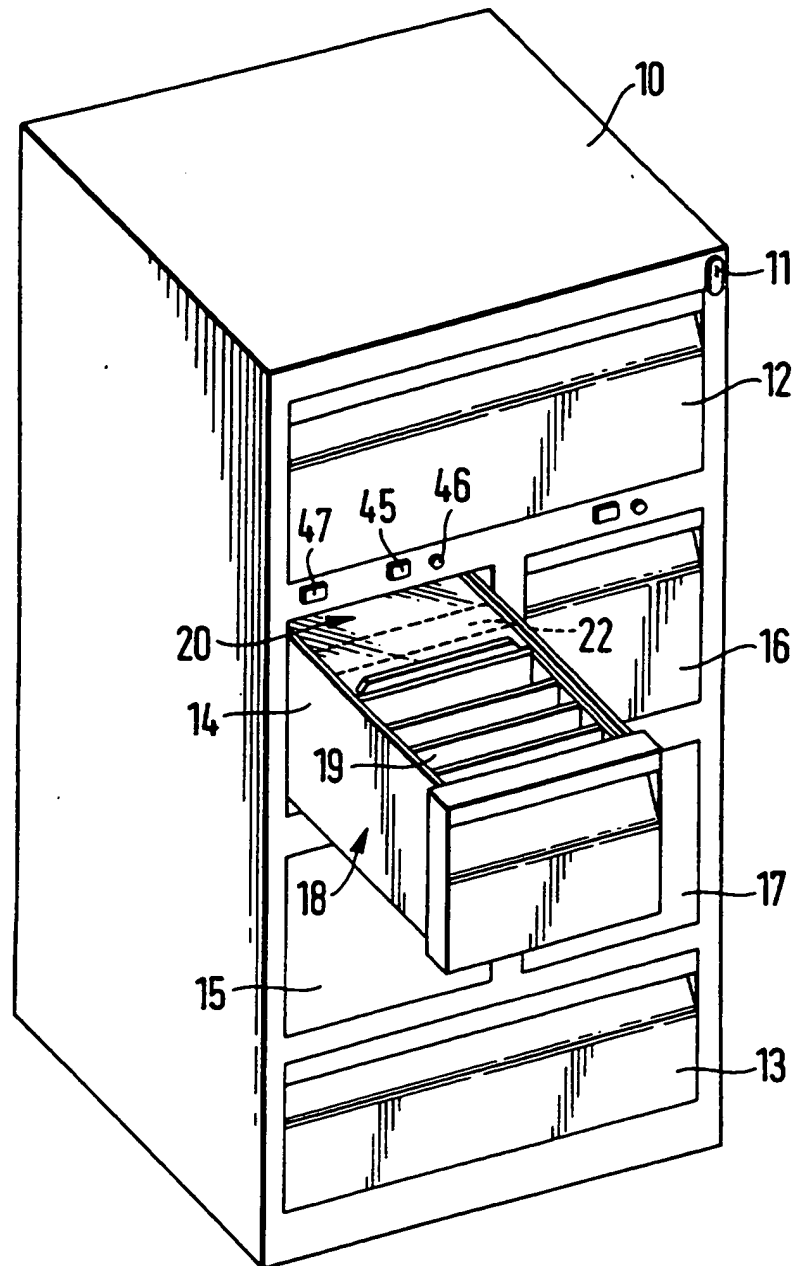


Fig. 1

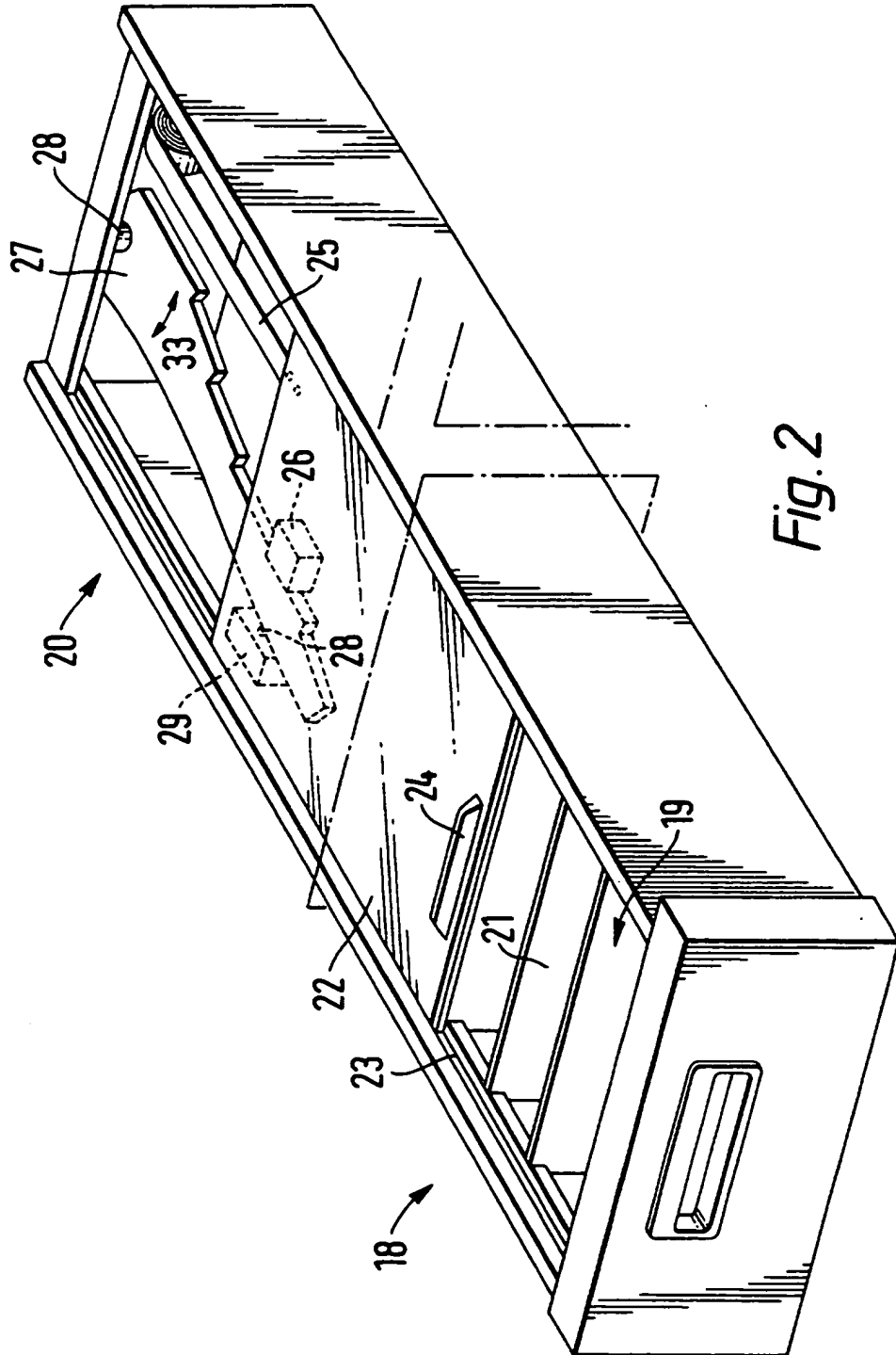


Fig. 2

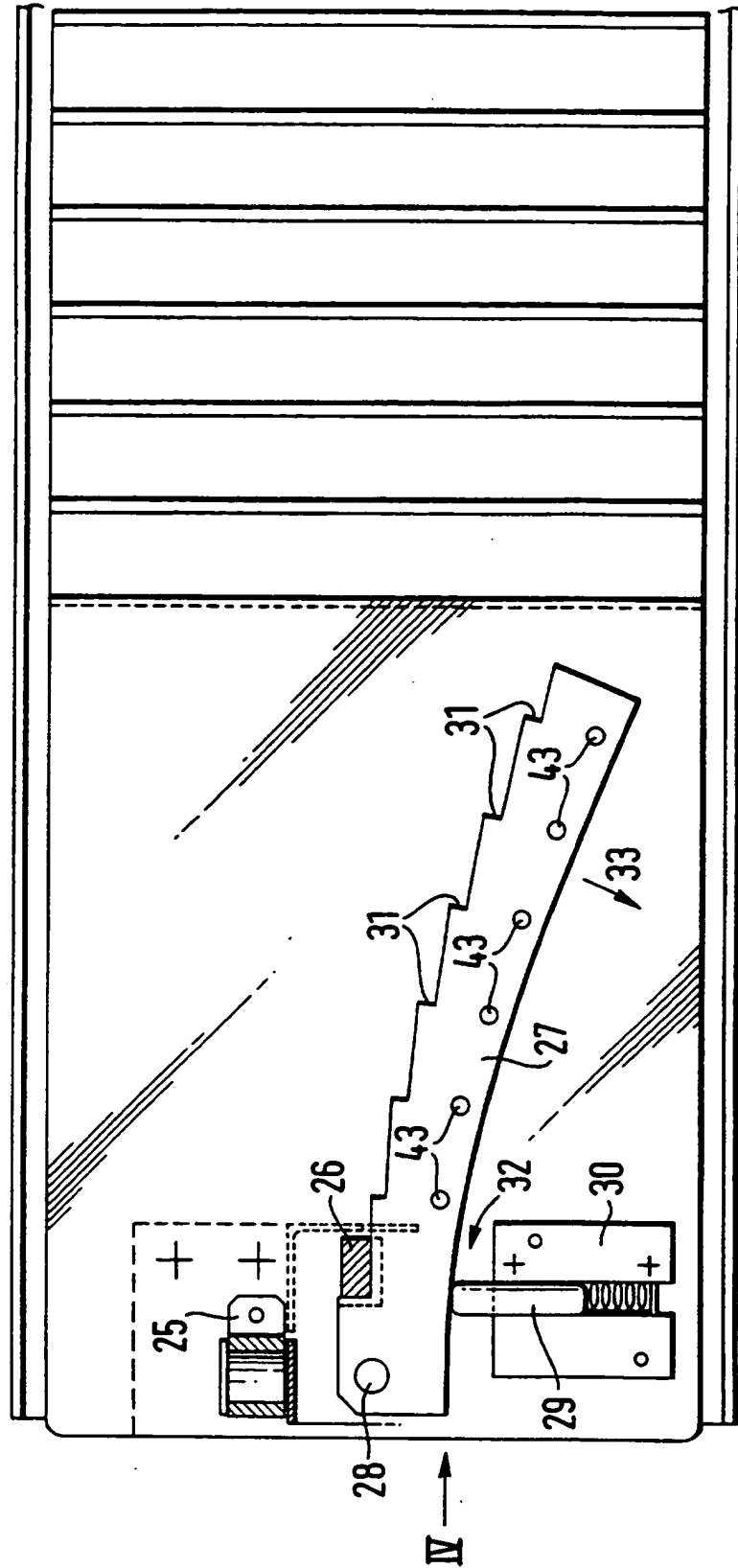


Fig.3

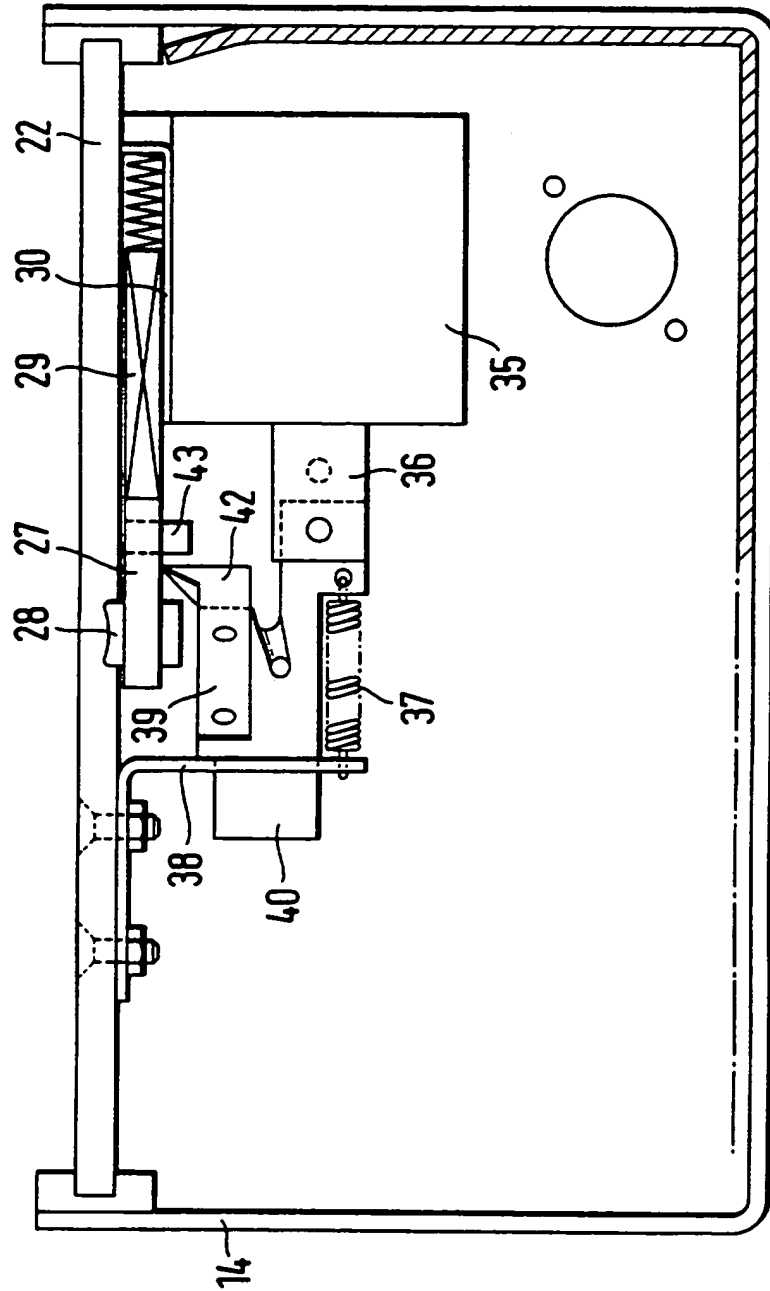


Fig. 4

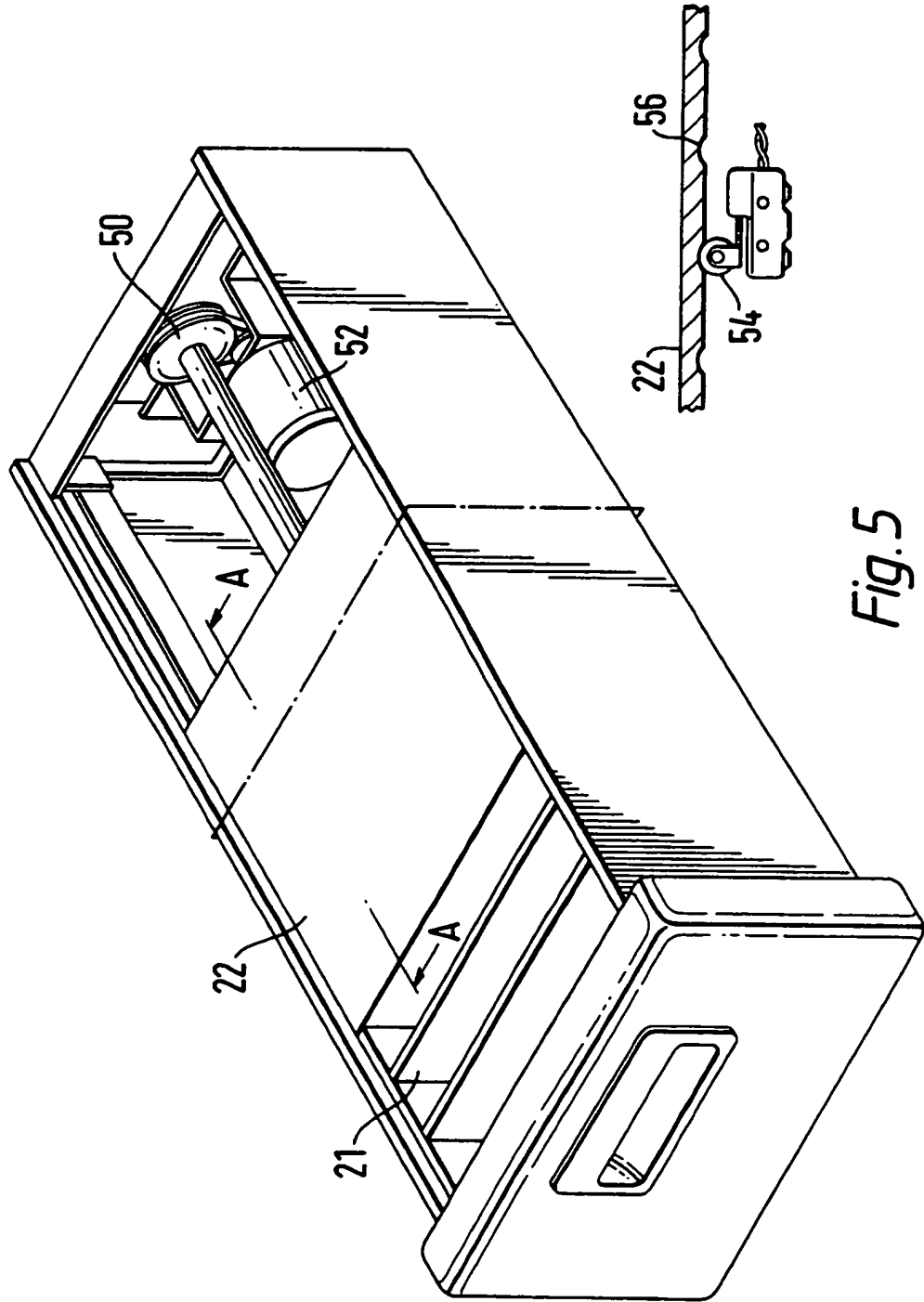


Fig. 5

Security Storage Box and Security Cabinet

This invention relates to a security storage box, particularly for incorporation in a security cabinet. Such a cabinet or box would be useful for counter clerks or tellers in banks, building societies and other organisations handling cash or other papers of value.

Organisations which handle large amounts of cash on a daily basis normally have available a heavy safe, often provided with a time delay lock which will only operate a certain period after instructions have been given to open it. It is a lengthy process to remove cash from the safe. Although secured by a time delay, at the time when the main safe is open the whole of its contents are at risk in the event of a raid at that time. There is a need to provide an instant deposit facility with a short time delayed removal. A counter clerk or teller will therefore usually keep a small float of cash ready to hand. Such a float constitutes a security risk in the event of a robbery and is therefore kept to a minimum. There is a need to provide an intermediate form of security for cash which may be needed more rapidly than can be conveniently achieved from a conventional safe.

Accordingly, the invention proposes a security storage box comprising an outer housing divided by internal walls into compartments open on one side, either the box or a slidable closure member being movable stepwise so as to selectively close or open said compartments, any opening movement being subject to a time delay for security purposes, while closing movement is possible at any time. Preferably, opening of each successive compartment is subject to a separate delay period. Conveniently, the compartments are open at the top.

In a practical form for use in a bank or building society, such a storage box may be incorporated with a number of other similar boxes in a single security cabinet. Each box can be in the form of an irremovable drawer in an armoured cabinet which is fixed in position adjacent to a teller position, and

each storage box can be designated for one designation of currency, i.e. notes of £5, £10 or £20. However, another user might use each individual drawer compartment to house buffer floats of say £500 in mixed notes and using one drawer for "receipts only".

There are two preferred configurations. In one, the box itself can be withdrawn only in timed steps from the security cabinet. In the other, each box can be withdrawn fully to an open position, but its compartments are covered by the closure member which slides in steps over the top.

If notes are placed in bundles in the compartments, starting with the innermost compartments, and leaving some of the compartments at the front of each box empty, the closure member can be slid from the rear so as to cover the compartments containing notes, while leaving the extra empty compartments to receive further notes paid in to the teller. Once one more compartment has been filled, the closure member is slid forward to cover it. Access to each compartment containing notes can then only be obtained after a time delay initiated in a control circuit.

As only one compartment is offered and then subject to time delay for the removal of items of value, the level of loss in the event of a raid is reduced.

Special provision can, however, be made to allow more rapid access to all the compartments at the end of a working day when the cash is to be returned in bulk to a main safe.

In order that the invention shall be clearly understood, an exemplary embodiment thereof will now be described with reference to the accompanying drawings, in which:

Figure 1 shows a perspective view of a security cabinet with a single storage box in an open position;



Figure 2 shows a perspective view of a single storage box; Figure 3 shows a plan view of the storage box in Figure 2; Figure 4 shows a view from the rear in the direction of arrow IV in Figure 3; and Figure 5 is a perspective view of another embodiment of storage box.

In Figure 1, a security cabinet 10 has a lock 11 which secures all of its six drawers. The cabinet and its drawers are all armoured, and the cabinet is fixed in place e.g. by bolting to the floor. Drawers 12 and 13 are utility drawers, drawer 12 preferably being adapted to hold the immediate cash float being used by a cashier or teller. Four further security storage boxes are incorporated in the form of drawers 14, 15, 16 and 17. Each of the four are built in to the cabinet 10 from the rear and the metal construction is such that they cannot be removed without destroying the cabinet. Drawer 14 is typical and will be described in detail.

The drawer or storage box 14 has a forward part 18 which contains a plurality of transverse compartments 19 and a rearward portion 20 which houses the mechanism for controlling the closure means for that storage box. The compartments 19 are formed by a series of transverse walls 21. The closure member is a slidable plate of armour steel 22 which runs in grooves 23 close to the upper edges of the box and has a handle 24. The plate 22 can slide between a rearward position, in which the rearward portion 20 of the box is covered and the compartments 19 are open, and a position in which all the compartments 19 are completely covered. The mechanism (to be described) which controls movement of the plate 22 permits unimpeded forward movement so as to cover the compartments 19, but rearward movement only in steps which uncover successive compartments 19 in turn. The electrical control mechanism incorporates a time delay which enforces a wait of e.g. 3 minutes before a

compartment can be uncovered.

The control mechanism for the slidable cover plate 22 is basically electromechanical with an electronic control circuit which is not illustrated or described in detail. The main mechanical system is shown in Figures 2 and 3. The plate 22 is subject to the rearward tension of a reeled flat spring 25. It is, however, prevented from free movement by the interengagement of a metal block 26 fixed on the underside of the plate 22 and a stepped cam member 27 which can swing about a pivot point 28 at the rear of the box. In Figure 3, the cover plate 22 is shown in its rearmost position, while in Figure 2, it is half-way forward. The cam member 27 is biased towards the block 26 at all times by a spring loaded plunger 29 held in a further block 30 also mounted rigidly on the underside of the plate 22.

The cam member or arm 27 is formed with a series of abutment shoulders 31 which engage the block 26 and prevent further rearward movement of the plate 22 at any time. However, sufficient space 31 is provided to allow the cam member 27 to be pivoted in the direction of the arrow 33 in order for the block 26 and the attached plate 22 to move towards the rear by an amount equal to the distance between two shoulders 31. In normal circumstances, this pivoting movement is prevented by the bias of the plunger 28, but this bias is overcome when required to release the cover plate by means of a solenoid mechanism which will be described with reference to Figure 4.

Referring to Figure 4, the electromechanical control system for the pivoting of the cam member 27 is also rigidly mounted on the underside of the plate 22. A solenoid 35 has an armature 36 which is biased towards the left by a tension spring 37. The latter is fixed to a bracket 38 also mounted on the plate 22, and said bracket also serves to stabilise the operating member 39 by virtue of a blade 40 which engages

the bracket 38. The actuating member 39 has a cam surface 42 which is positioned so as to be capable of engaging each one of a series of downwardly projecting pegs 43 rigidly mounted on the cam member 27. Each peg 43 is associated with an abutment shoulder 31. It can be seen that upon actuation of the solenoid 35, the cam surface 42 is drawn towards the right against the spring 37 and pushes against the respective peg 43, thus pivoting the cam member 27 in the direction of the arrow 33. This allows disengagement of the block 26 with the shoulder 31 and permits the plate 22 to move back one step under the tension of spring 25.

Each storage box or drawer is controlled by an electrical control circuit which is not in principle considered inventive. Suitable operating buttons are provided for each drawer, and these may operate, for example, in the following fashion. Upon initial actuation of an "open" button 45, a timing circuit is initiated. After the expiry of the time period, a signal light 46 will operate to indicate the start of a further period within which actuation of the closure member 22 may be initiated so as to gain access to one more compartment 19. A further push on the activating button 45 will then provide a signal to the solenoid 35 which will cause the opening movement. Various other forms of similar control may be envisaged. In case of an emergency, a further override button 47 may be provided which would have the effect of cancelling any opening procedure just initiated.

Time delayed access to cash held in each storage box would be highly inconvenient at the end of a working day when the contents of the security cabinet must be transferred to a main safe. A total override system may therefore be provided which would permit, possible after a relatively long time delay, the closure plate to be moved fully back to reveal all compartments 19 without any further time delays at each stage. Naturally, the control button or control key to permit this would need to be hidden or inaccessible at normal

times. For example, its actuation could be linked to the locking of external doors or other security measures. During the relatively long time delay, the normal access procedure as described previously can continue.

Another embodiment is shown in Figure 5, in which the cover plate 22 is coupled to a lead screw 50 which is rotatable by an electric motor 52. This example is basically the same as that described above except that the movement of the plate 22 is performed by motor 52 and controlled by a circuit (not shown) which preferably incorporates two direction buttons for forwards and backwards movement. The "forward" button will cause movement of the plate 22 in a direction to cover a previously open compartment 19. It is intended that the control will cause the plate 22 to move to a completely closed position, in which all the compartments 19 are covered, when the "forward" button is continuously depressed.

The "reverse" button causes the plate 22 to move backwards and thereby to uncover a previously covered compartment 19. The control unit will activate a time delay on depression of the "reverse" button, only after which will the motor 52 be actuated to move the plate 22 backwardly. Actuation of the motor 52 will be sufficient to uncover only one new compartment 19 at a time. For this purpose, there may be provided a position sensor 54 which cooperates with indentations 56 provided in appropriate locations on the underside of the plate 22.

As with the previously described embodiment, an override function may be provided to allow complete retraction of the plate 22 without stepped time delays, to provide easy access to all the compartments 19, for example at the close of business.

A safety device is preferably incorporated to cause the plate 22 to retract if it is detected that an object, such as a

person's finger, is trapped in a compartment 19 which is being covered by the plate 22. The safety device may cause the plate 22 to retract to the end wall of the previously open compartment 19.

In a major alternative configuration, a similar control mechanism and circuit as described can be used to retain the drawer itself within its cabinet, without the use of a sliding cover plate. Only the compartments projecting at the time are then accessible, the others being still within the cabinet. However, in this configuration, drawers could not conveniently be positioned one above another but only side-by-side.

It is also possible to envisage the installation of storage boxes as described within a main safe, or that a single wide storage box may have two closure members covering different compartments and subject to differing time delays. For ease of clearance at the end of the day, the compartments can be fabricated in a set as a single inner container, which can be removed complete with contents to put in a safe.

CLAIMS

1. A security storage box comprising an outer housing divided by internal walls into compartments open on one side, either the box or a slidable closure member being movable stepwise so as to selectively close or open said compartments, any opening movement being subject to a time delay for security purposes.
2. A box according to claim 1, wherein the opening of each successive compartment is subject to a separate delay period.
3. A box according to claim 1 or 2, wherein closing movement is possible without any time delay.
4. A box according to claim 1, 2 or 3, wherein the box is in the form of an irremovable drawer in an armoured cabinet.
5. A box according to any preceding claim, including a forward part which contains a plurality of transverse compartments and a rearward portion which houses a mechanism for controlling the closure means for that storage box.
6. A box according to any preceding claim, including a stepped cam member engageable with the closure member to allow stepped opening of the closure member.
7. A box according to any one of claims 1 to 5, including a threaded member coupled to the closure member and actuatable by a motor.
8. A box according to claim 7, including means for providing stepped rotation of the motor and thereby stepped movement of the closure member.
9. A box according to any preceding claim, including a plurality of closure members covering different compartments.
10. A security storage box substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.



Application No: GB 9705264.1  
Claims searched: 1-10

Examiner: John Graham  
Date of search: 27 May 1997

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): A4B. E2X.

Int Cl (Ed.6): A47B. E05G.

Other: ONLINE DATABASE:WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	GB2214412 A (TENERET) see particularly time lock 9	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.